

CLAIMS

What is claimed is:

- 1 1. A method for fabricating recording head sliders made from silicon substrates with
2 SiO₂ overcoats, comprising:
 - 3 A) providing a Si wafer which has been fabricated with a SiO₂ overcoat;
 - 4 B) depositing a layer of DRIE-resistant material on said SiO₂ overcoat;
 - 5 C) depositing a patterned layer of RIE-resistant material on said layer of DRIE-
6 resistant material to form a primary mask;
 - 7 D) etching by RIE through said primary mask to pattern said SiO₂ overcoat layer
8 and said layer of DRIE-resistant material;
 - 9 E) removing said primary mask to expose said layer of DRIE-resistant material
10 which has now been patterned to form a secondary mask;
 - 11 F) etching by DRIE through said secondary mask to cut said Si wafer into pieces;
12 and
 - 13 G) removing said secondary mask.
- 1 2. The method of fabrication of claim 1, wherein:
2 said RIE-resistant material is a metal.
- 1 3. The method of fabrication of claim 1, wherein:
2 said RIE-resistant material is a transition metal.

1 4. The method of fabrication of claim 1, wherein:
2 said RIE-resistant material is chosen from the group consisting of Cu, NiFe,
3 and...(MORE)

1 5. The method of fabrication of claim 1, wherein:
2 said DRIE-resistant material is chosen from the group consisting of Al_2O_3 and...
3 (MORE)

1 6. The method of fabrication of claim 1, wherein:
2 said C) depositing a patterned layer of RIE-resistant material on said layer of
3 DRIE-resistant material to form a primary mask comprises;
4 i) applying, exposing and developing photoresist to create the pattern;
5 ii) plating the layer of RIE-resistant material into the photo-resist pattern; and
6 iii) stripping the photo-resist.

1 7. The method of fabrication of claim 6, wherein said C) depositing a patterned layer
2 of RIE-resistant material on said layer of DRIE-resistant material to form a primary mask
3 further comprises;
4 applying a seed layer of RIE-resistant material before applying said photoresist.

1 8. The method of fabrication of claim 7, wherein:
2 said D) etching by RIE further comprises:

3 first sputter-etching away said seed layer of RIE-resistant material before
4 RIE.

1 9. The method of fabrication of claim 1, wherein:
2 said E) removing said primary mask is done by selective wet etching.

1 10. The method of fabrication of claim 1, wherein:
2 said F) removing said secondary mask is done by selective wet etching.

1 11. A method for fabricating recording head sliders made from silicon substrates,
2 comprising:
3 A) producing a SiO₂ overcoat on said Si wafer;
4 B) depositing a layer of DRIE-resistant material on said SiO₂ overcoat;
5 C) depositing a RIE mask on said layer of DRIE-resistant material;
6 D) etching by RIE through said RIE mask to pattern said SiO₂ overcoat layer and
7 form a DRIE mask from said DRIE-resistant material;
8 E) removing said RIE mask to expose said DRIE mask;
9 F) etching by DRIE through said DRIE mask to cut said Si wafer; and
10 G) removing said DRIE mask.

1 12. The method of fabrication of claim 11, wherein:
2 said RIE-resistant material is a metal.

1 13. The method of fabrication of claim 11, wherein:

2 said RIE-resistant material is a transition metal.

1 14. The method of fabrication of claim 11, wherein:

2 said RIE-resistant material is chosen from the group consisting of Cu, NiFe,

3 and...(MORE)

1 15. The method of fabrication of claim 11, wherein:

2 said DRIE-resistant material is chosen from the group consisting of Al_2O_3 and...

3 (MORE)

1 16. The method of fabrication of claim 11, wherein:

2 C) depositing a RIE mask on said layer of DRIE-resistant material comprises;

3 i) applying, exposing and developing photoresist to create the pattern;

4 ii) plating the layer of RIE-resistant material into the photo-resist pattern;

5 and

6 iii) stripping the photo-resist.

1 17. The method of fabrication of claim 16, wherein:

2 C) depositing a RIE mask on said layer of DRIE-resistant material further
3 comprises:

4 i) applying a seed layer of RIE-resistant material before applying said
5 photoresist.

1 18. The method of fabrication of claim 17, wherein:
2 said D) etching by RIE further comprises:
3 first sputter-etching away said seed layer of RIE-resistant material before
4 RIE.

1 19. The method of fabrication of claim 11, wherein:
2 said E) removing said RIE mask is done by selective wet etching.

1 20. The method of fabrication of claim 11, wherein:
2 said F) removing said DRIE mask is done by selective wet etching.